

(12) UK Patent Application (19) GB (11) 2 041 764 A

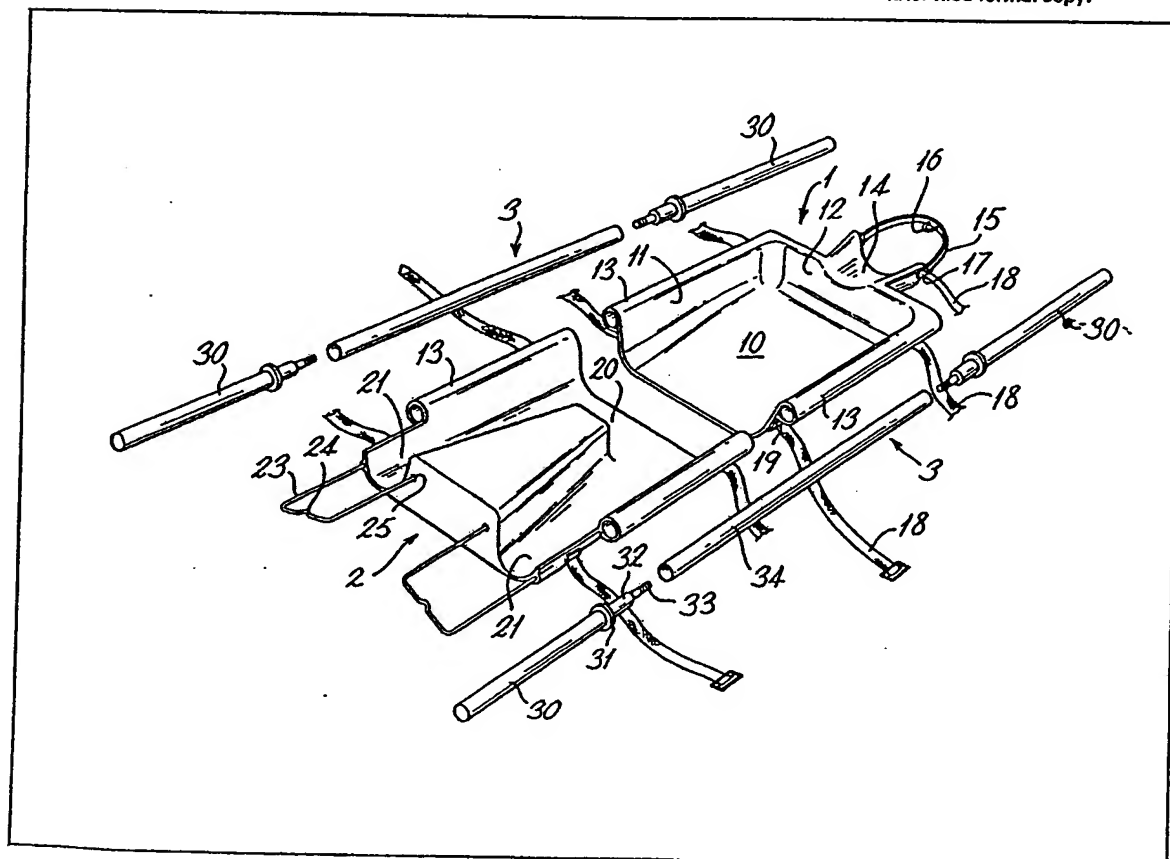
(21) Application No 7904739
(22) Date of filing 9 Feb 1979
(43) Application published
17 Sep 1980
(51) INT CL³
A61G 1/00
(52) Domestic classification
A5X 20
A5R 6
(56) Documents cited
GB 1276422
(58) Field of search
A5R
A5X
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(54) Patient support apparatus

(57) A stretcher or body splint has support parts (1, 2) held together as a platform by members (3) serving also as handles. Support part (1) has a dish area (10) between side walls (11) and an end wall (12) for the torso and arms alongside and an outwardly divergent dish area (14) through the end wall for the neck and head; support part (2) has leg troughs (21)

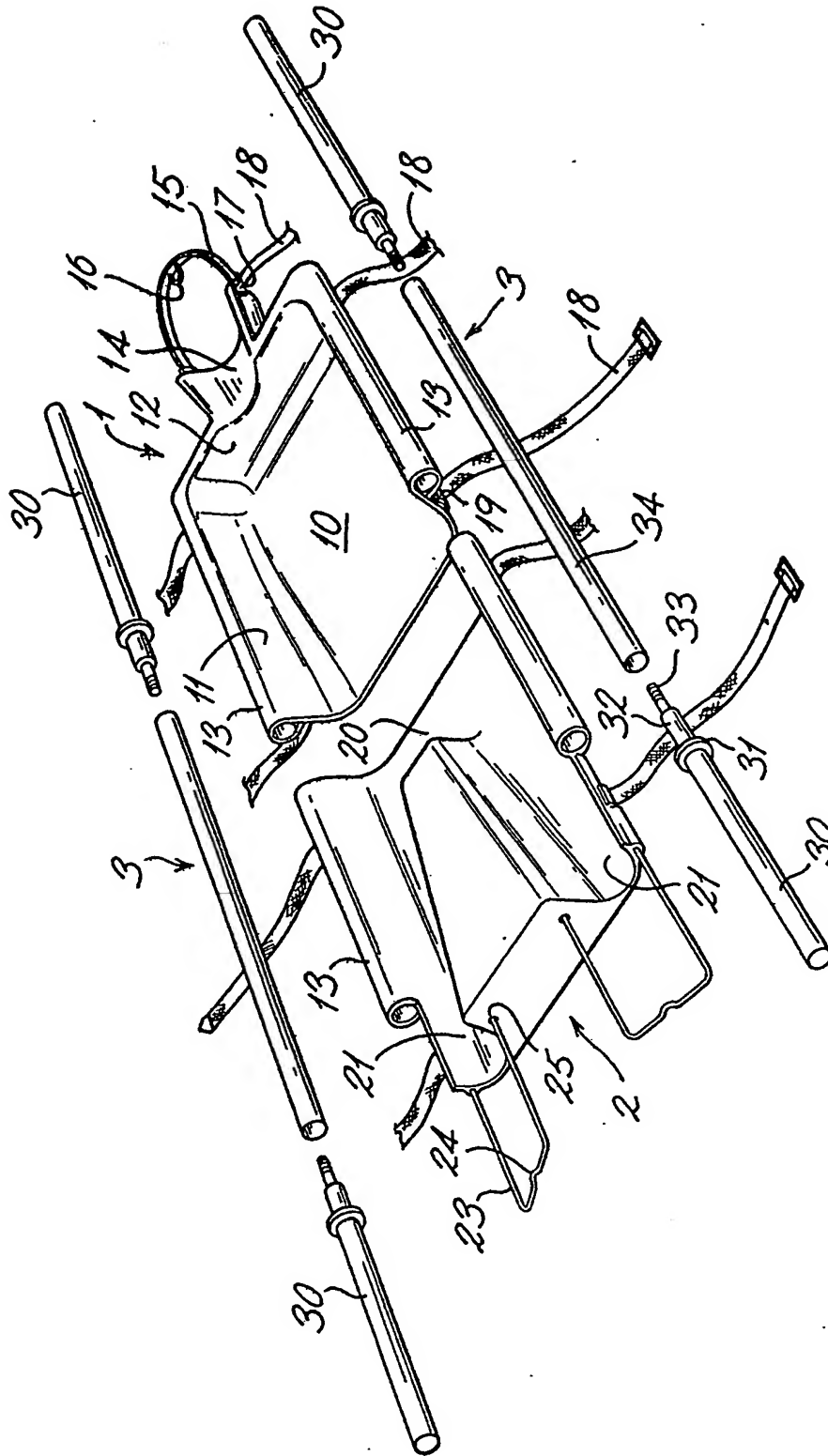
which form the arms of a U-shaped dish area between a triangular plateau and outer side walls; the side walls of the body parts turning outwardly to define tunnels (13) for the elongate members; the members include a central linking portion (34) and flanged end portions (30) holding the apparatus together. The support parts are suitably of plastics material allowing X-ray therethrough, and can have anchorage means (15, 23, 23) for traction at the head and legs.

The drawing originally filed was informal and the print here reproduced is taken from a later filed formal copy.



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SPECIFICATION

Patient support apparatus

This invention concerns patient support apparatus and more particularly such apparatus which can serve the functions of both a stretcher and a whole body splint.

In a more general aspect the present invention provides a patient support apparatus comprising: two body support parts of stiff shell form locatable in end-to-end relation to provide a platform, one of said parts being dished over a major area to receive a patient's trunk with arms alongside and being dished over a minor area to receive the patient's neck and head, and the other of said parts being dished to define two transversely-spaced troughs therealong respectively to receive the patient's legs; and a plurality of elongate members engageable with said parts along the sides thereof to interconnect the same and to project from the ends of said parts as handles.

It will be readily appreciated that the apparatus serves as a stretcher when assembled, and it is to be noted that the body support parts are stiff and can serve a splint function by the use of transverse strapping to secure the patient. Normally, the apparatus will be provided with straps connected thereto for this purpose.

The provision of the two body support parts is advantageous in allowing partial or whole body support to be given to a patient prior to any significant movement of the patient, thereby reducing the risk of secondary injury. This is particularly relevant to the provision of spinal support, the relevant body support part being applicable to a patient in a confined space such as the interior of a motor vehicle following an accident.

The provision of two body support parts is also advantageous in allowing the apparatus to be reduced in size for storage and transportation, and the elongate members are suitably provided as longitudinal portions of two tubular poles for the same reason. Also the support parts are suitably of moulded plastics material construction to reduce the weight of the apparatus while at the same time rendering the body-receiving areas thereof radio-translucent to allow X-ray of a patient supported therein. It will be noted that the support parts are stiffened by their dished forms, and this stiffness is enhanced by the formation of such parts with tunnels along their side edges to receive the associated elongate members.

In a preferred form, the presently proposed apparatus additionally comprises anchorage means affording the application of traction to a patient supported in the apparatus. Preferably such means are in multiple form and project from the body support parts adjacent said minor area and the free ends of said troughs to afford traction by way of the head and either one or both legs of the patient.

In order that the above-discussed and other features of the present invention may be more

clearly understood, the same will now be described, by way of example, with reference to the accompanying drawing which illustrates in an exploded perspective view one embodiment of the invention.

The principal parts of the illustrated apparatus comprise an upper body support part 1, a lower body support part 2 and two elongate members 3.

The upper body support part 1 is of stiff shell form moulded from a plastics material such as of glass fibre reinforced type. The shell form includes a major, dished, trunk-receiving area 10 of generally rectangular plan shape, this area having a substantially, correspondingly rectangular, flat base leading along three of its sides through smoothly curved formations into walls. The walls 11 and the wall 12 along the two opposed sides and the intervening side of the relevant three sides will be seen to be longitudinal side and free end walls, respectively, relative to the overall configuration of the apparatus when assembled.

Each of the side walls 11 is formed in one piece adjacent its upper edge with a tunnel 13 extending outwardly therealong, with each such tunnel being strengthened by formation around a metal tube.

An upper central region of the end wall 12 opens smoothly into a minor dished head/neck-receiving area 14 having a trough shape which projects longitudinally outwardly and divergently from the major area 10. This area 14 has connected to its free end corners the respective ends of a metal generally U-shaped anchorage member 15 which has an eye 16 projecting inwardly from its base. The anchorage member 15 is preferably connected with the area 14 by way of linkage devices 17 which allow the former to be folded over the latter from a spring-locked disposition in which the member 15 projects, as shown, longitudinally from the area 14.

The part 1 is provided with a pair of straps 18 for transverse connection across the major area 10 adjacent respective ends thereof. These straps are conveniently each of one-piece form and pass beneath the area 10 by way of short transversely directed tunnels 19 formed in the underside of the part 1 in each corner of the area 10. In addition, a shorter strap 18 is connected to the part 1 adjacent the free corners of the area 14, in this case to the linkage devices 17.

The lower body support part 2 is also of stiff shell form moulded from the same material as part 1. The part 2 has an overall generally rectangular plan shape which is dished to define a generally U-shape with the base area 20 of this shape extending across one end of the part and the associated areas extending as troughs 21 along the sides of the part. The troughs 21 are separated by a plateau area of generally triangular shape with its base at the free end of the part 2 so that the troughs are individually tapered towards such end.

The outer side walls of the troughs are formed in one piece with tunnels 13 corresponding to those of support part 1, although in this case the

tunnels do not extend as far as the free ends of the troughs.

Also, as with the support part 1, part 2 is provided with a pair of straps 18 passed therebelow, through tunnels 18 adjacent the corners of the part, for transverse connection thereacross.

The support part 2 is also associated with two metal anchorage members 23 of like elongated generally U-shape, the base portion of each such member being cranked to provide an inwardly longitudinally projecting bight 24, and the arms of each such member being parallel. The members are freely separably connected with the part 2 by longitudinally sliding receipt of their free ends in sockets 25 formed in the part 2. The sockets 25 are arranged in pairs associated with respective ones of the troughs 21, the sockets of each pair being arranged along respectively opposite sides of the associated trough. The sockets are suitably formed by embedding metal tubular liners in the moulded material of the support part, such liners serving additionally to reinforce the free ends of the troughs.

It is to be noted that the adjacent inner end peripheries of the illustrated support parts 1 and 2 are of mirror image form whereby the parts can be longitudinally abutted with these peripheries substantially wholly mutually engaged and the tunnels 13 coaxially aligned along each side of the abutted parts.

The elongate members 3 are of like generally tubular pole form and they are each made up from three parts. These three parts include a pair of like handle parts 30 of circular section having uniform diameter over most of the length except at one end where the diameter is first increased to provide a flange 31 and thereafter reduced in two stages to provide first a plug portion 32 and then an externally threaded screw portion 33. The third part 34 of each member 3 is of circular cylindrical form having an external diameter no greater than the internal diameter of the tunnels 13, and an internal form in each end portion complementary to the plug and screw portions of each handle part 30.

Assembly of the parts 1, 2, and 3 is largely self-evident from the foregoing description and the drawing. In assembly the parts 1 and 2 are abutted in end-to-end engagement in the illustrated relative orientations, the pole middle parts 34 are slidably engaged in the tunnels 13 to bridge the junctions between the respectively aligned pairs of tunnels, and the handle parts 30 have their plug and screw portions 32 and 33 located in the free ends of respective tunnels 13 and threadably connected in the adjacent end of the associated part 34. In an alternative arrangement, bayonet connections can be used in place of the threaded connections in the poles.

Use of the assembly is also largely self-evident from the foregoing description and drawing. A patient can be located in the parts 1 and 2 once these have been assembled in a similar operation to that for a conventional stretcher, whereafter the

patient is secured by connection of the straps 18 across his body, with the shorter strap passing across his forehead. If necessary, traction can be applied to the head and/or either on or both of the patient's legs by way of the anchorage members 15 and 23. In the former case traction can be applied by use of a sling, such as a Glisson's halter form, or other means, such as Gardner Wells skull tongs, acting between the patient's head and the eye 16 of member 15. In the latter case a crepe bandage or other means is applied to act between the patient's leg, such as around the ankle, and the bight 24 of the relevant member 23.

In alternative use, either of the parts 1 and 2 can be applied to the patient and strap securement, and also appropriate traction, effected before the patient is moved further for assembly of the apparatus.

As an aid to firm securement of a patient, particularly bearing in mind variations in individual patient size, the apparatus is preferably associated with wedges or other shapes of plastics material for location between a patient and the parts 1 and 2, particularly at the sides.

It is also to be noted, as indicated earlier, that the major area of the apparatus is made of radio-translucent material so that a patient can be X-rayed without removal from the apparatus. It will be appreciated in this connection that the metal parts of the apparatus are so arranged as to produce no undue interference with X-ray requirements — indeed the poles 3 can be removed for this purpose. A secondary advantage of the particular use of plastics material for radio-translucency is that such materials can be economic in cost, easily moulded, require no maintenance, and can be permanently suitably brightly coloured as a visual aid for use in poorly lit conditions.

While the invention has been described with more particular reference to the illustrated embodiment, variations in detail are clearly possible without departing from the more general form of the invention as first discussed above.

110 CLAIMS

1. A patient support apparatus comprising: two body support parts of stiff shell form locatable in end-to-end relation to provide a platform, one of said parts being dished over a major area to receive a patient's trunk with arms alongside and being dished over a minor area to receive the patient's neck and head, and the other of said parts being dished to define two transversely spaced troughs therealong respectively to receive the patient's legs; and a plurality of elongate members engageable with said parts along the sides thereof to interconnect the same and to project from the ends of said parts as handles.

2. Apparatus according to Claim 1 wherein each of said parts has an overall generally rectangular shape, said one part is dished over said major area with corresponding shape leading over three of its sides into upstanding walls of

- which the middle one is dished in a central portion thereof to define said minor area, said other part being dished over a generally U-shaped area of which the U-arms define said troughs with
- 5 outermost side walls therealong, and the remaining side of said one part and side of said other part along the base of said U-shaped area having reflected geometry.
- 10 3. Apparatus according to Claim 2 wherein said minor area is of trough shape projecting outwardly and divergently from said main area.
4. Apparatus according to Claim 2 or 3 wherein said two troughs extend divergently from said U-shaped area base.
- 15 5. Apparatus according to Claim 4 wherein said other part defines a generally triangular shaped plateau within said U-shaped area.
6. Apparatus according to any one of Claims 2 to 5 wherein each longitudinal side wall relative to
- 20 said end-to-end relation is outwardly turned over to define a tunnel for receipt of said elongate members.
7. Apparatus according to Claim 6 comprising two of said elongate members, each such member being in three parts including a central part for
- 25 receipt in said tunnels along one longitudinal side of said parts, and two similar end parts connectable with opposite ends of a respective middle part and
- 30 outwardly stepped partway therealong to maintain, when so connected, said end-to-end relation.
8. Apparatus according to any preceding claim wherein said support parts are made of radio-translucent plastics material.
- 35 9. Apparatus according to any preceding claim wherein said dished areas for receipt of straps to pass around such parts and to secure a patient therein.
10. Apparatus according to any preceding claim comprising anchorage means affording the application of traction to a patient supported therein.
- 40 11. Apparatus according to Claim 10 comprising a plurality of said anchorage means projecting from said support parts respectively adjacent said minor area and the free end of said troughs to afford traction by way of the head and either one or both legs of the patient.
- 45 12. Apparatus according to Claim 11 wherein each of said anchorage means projects in hoop form from the respective minor area or trough and has a bight or eye formation in its outermost portion.
- 50 14. A patient support apparatus substantially as herein described with reference to the accompanying drawing.
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